

**ABSTRACT OF THE DISCLOSURE**

The present invention discloses non-aqueous electrolytes having an extended temperature range for battery applications. The electrolyte comprises an electrolyte salt, e.g.  $\text{LiPF}_6$ , a first non-aqueous solvent, and a second non-aqueous solvent having a structure of formula I or II. The electrolyte of the present invention has higher ionic conductivity, lower freezing point, and lower vapor pressure at high temperature than commercial electrolytes. These non-aqueous electrolytes can be used, for example, in lithium-ion batteries. Methods of making lithium-ion batteries are also described.

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